

REMARKS

Reconsideration of the above-identified patent application in view of the amendments above and the remarks following is respectfully requested.

Claims 3, 4, 8-10, 13, 16 and 18-22 are in this case. Claims 3, 4, 8-10, 13, 16 and 18-22 have been rejected under § 103(a).

The claims before the Examiner are directed toward a system board with a connector with two ports. One port faces outward, parallel to the system board, at an exterior edge of the system board. The other port faces inward, parallel to the system board, to the interior of the system board in order to accommodate a peripheral device that is electrically connected to the system board only via the second port.

§ 103(a) Rejections – Meng ‘399

The Examiner has rejected claims 13, 3, 4, 8-10, 16 and 18-22 under § 103(a) as being unpatentable over Meng, US Patent No. 6,231,399 (henceforth, “Meng ‘399”). The Examiner’s rejection is respectfully traversed.

Meng ‘399 teaches a card edge connector assembly **10** for connecting two daughter boards to a mother board of a computer. Card edge assembly **10** is connected mechanically to the mother board using boardlocks **60** and electrically to the daughter boards using opposite-facing card edge connectors **14** and **16**.

The Examiner proposes that it would be obvious to position card edge assembly **10** of Meng ‘399 with one of the card edge connectors facing outward at an exterior edge of the mother board, as in the present invention.

In order to reject claims 13, 3, 4, 8-10, 16 and 18-22 under § 103(a), the Examiner must make a *prima facie* case for obviousness. This the Examiner has failed to do.

First of all, in comparing the invention to the prior art, the invention must be considered as a whole. See *In re Antonie*, 559 F.2d 618, 620, 195 USPQ 6,8 (CCPA 1977):

In determining whether the invention as a whole would have been obvious under 35 U.S.C. 103, we must first delineate the invention as a whole. In delineating the invention as a whole, we look not only to the subject matter which is literally recited in the claim in question...but also to those properties of the subject matter which are inherent in the subject matter and are disclosed in the specification...Just as we look to a chemical and its properties when we examine the obviousness of a composition of matter claim, it is this invention *as a whole*, and not some part of it, which must be obvious under 35 U.S.C. 103. (emphasis in original) (citations omitted)

The present invention places one port/recess of a connector at an exterior edge of a system board of a computer and facing outward, and another port/recess of the connector facing inward. This allows the same connector to be used to connect, to the system board, a peripheral that is outside the computer and another peripheral that is inside the computer. The prior art generally conceives of connectors as being for either interior connections or for exterior connections, but not for both. In the specific case of Meng '399, the purpose of card edge connector assembly **10** is for the strictly interior connection of two daughter boards to a mother board. Meng '399 describes the problem that he solves as follows:

...the daughter board is horizontally inserted into or ejected out of a card edge connector proximate to the mother board to which the connector is mounted. Such a low position of the daughter board interferes with an efficient layout of components on the mother board. Thus, an assembly of two or more card edge connectors which engage daughter boards at an elevated position is desirable. (emphasis added)

and the solution taught by Meng '399 is (column 2 lines 62-65)

The two card edge connectors **14, 16** of the card edge connector assembly **10** engage daughter boards at an elevated position thereby promoting an efficient layout of components on the mother board. (emphasis added)

In other words, the daughter boards are inside the computer, parallel to the mother board, but far enough away from the mother board to not interfere with the components on the mother board.

Second, as stated in the Manual of Patent Examining Procedure, page 2100-128:

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference...must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

In the present case, there is no motivation in the prior art to modify the teachings of Meng '399. Continuing the citation of the Manual of Patent Examining Procedure, on page 2100-131:

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990) (Claims were directed to an apparatus for producing an aerated cementitious composition by drawing air into the cementitious composition by driving the output pump at a capacity greater than the feed rate. The prior art reference taught that the feed means can be run at a variable speed, however the court found that this does not require that the output pump be run at the claimed speed so that air is drawn into the mixing chamber and is entrained in the ingredients during operation. Although a prior art device "may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation to do so." 916 F.2d at 682, 16 USPQ2d at 1432.)

Similarly, in the present case, even though, as noted by the Examiner, Meng '399 teaches (column 3 lines 3-5) that

...changes may be made in detail, especially in matters of shape, size and arrangement of parts within the principles of the invention...

these changes must be within the principle of the invention, which is to position two daughter boards parallel to the mother board, inside the computer, far enough from the mother board to not interfere with the components on the mother board. There is neither a hint nor a suggestion in Meng '399 of positioning card edge connector assembly 10 with one of the card edge connectors facing outward from an exterior edge of the mother board, even though this, too, would solve the problem addressed by Meng '399, by placing one of the daughter boards outside the computer, or at least laterally beyond the mother board.

Although claims 3 and 4 are allowable merely by virtue of depending from independent claim 13, Applicant takes the liberty of pointing out additional reasons why these claims are allowable.

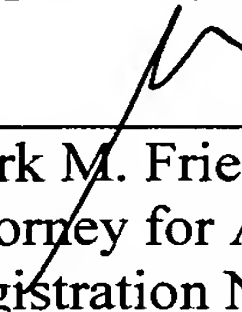
Claim 3 recites the limitation that the two ports are substantially functionally identical. This is contrary to the conventional wisdom, which uses different kinds of ports for components that are intended to be housed within a computer and components that are intended to be mounted outside the computer. An exterior port needs to be more robust than an interior port, because peripheral devices that are mounted outside the computer generally are expected to be reversibly mounted on the computer, so that an exterior port must be designed to withstand more cycles of connection and disconnection than an interior port, and because an exterior port is exposed to the elements when the port is not in use.

Claim 4 recites the limitation that the two ports are USB ports. As of the priority date of the above-referenced patent application, the conventional wisdom was to use USB ports for connecting peripheral devices to computers, not for connecting components within the same computer. Attached please find a description of Universal Serial Bus (USB) dated July 24, 2003. Note the first line of the description:

Universal Serial Bus (USB) is a serial bus standard for connecting devices to a computer (usually a PC). (emphasis added)

In view of the above remarks it is respectfully submitted that independent claims 13 and 19-22, and hence dependent claims 3, 4, 8-10, 16 and 18 are in condition for allowance. Prompt notice of allowance is respectfully and earnestly solicited.

Respectfully submitted,



Mark M. Friedman
Attorney for Applicant
Registration No. 33,883

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Universal Serial Bus

From Wikipedia, the free encyclopedia.

Revision as of 10:58, 24 July 2003; view current revision

← Older revision | Newer revision →

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Universal Serial Bus (USB) is a serial bus standard for connecting devices to a computer (usually a PC).

Over a hundred devices can be connected to a single port in a tree-like fashion. Devices can be attached and removed whilst the computer is still powered on ("hot plugging and swapping"), and they can be supplied with power through the USB connection. Care is called for, however, when choosing a power supply for a USB system. It is very easy to overdraw a system's wattage when many USB devices are in use. USB hubs, both powered and unpowered are used to increase the number of attached devices. By using powered hubs (hub contains a separate power supply) power management concerns are minimized. Powered hubs supply power to downstream devices (within prescribed limits) without draining power from the upstream connection.

While USB defines four types of connectors for the attachment of devices to the bus, there are some examples where the mechanical layer has been changed. For example, IBM UltraPort is a USB connection on the top of notebooks CRTs, but it uses a different mechanical connector while preserving the USB signaling and protocol.

USB is used to connect peripherals such as mice, keyboards, scanners, digital cameras, printers, hard drives, and networking components to the main computer. For multimedia devices such as scanners and digital cameras, USB is the most common interconnect method. In printers, USB is also growing in popularity and displacing parallel ports because USB makes it simple to add more than one printer to a computer.

In the case of hard drives, USB is unlikely to completely replace buses such as ATA (IDE) and SCSI because USB is somewhat slower than those standards. The new Serial ATA standard allows transfer rates to approximately 150 MB (mega bytes) per second. However, USB, and especially USB 2.0 has the important advantage that it is possible to install and remove devices without opening the computer case, making it useful for external hard disks. Today a number of manufacturers offer portable USB 2.0 hard drives that offer performance nearly indistinguishable from conventional ATA (IDE) drives.

USB has not completely replaced AT keyboard connections and PS/2 mouse connections, but virtually all PC motherboards today have one or more USB ports. As of 2003 most new motherboards have multiple USB 2.0 high-speed ports.

USB 1.1 has two data rates. 1.5 Mbps for keyboards, mice, joysticks, and the like, and **full speed** at 12 Mbps (12 million bits per second). The USB 2.0 standard supports **high speed** at 480 Mbps along with operation at the **full speed** signalling rate of 12 Mbps. At this highest speed USB 2.0 is in direct competition with firewire.

USB 1.1 has been renamed to USB 2.0 Full speed by the USB Forum, and USB 2.0 has been renamed USB 2.0 High speed.

